Before the
Federal Communications Commission
Washington, D.C. **20554**

In the Matter of	)	
	)	
Implementation of Sections 309(j) and 337	)	WT Docket No. 99-87
of the Communications Act of 1934 as Amended	)	
	)	
Promotion of Spectrum Efficient	)	RM-9332
Technologies on Certain Pan 90	)	
Frequencies	)	

SECOND REPORT AND ORDER
AND SECOND FURTHER NOTICE OF PROPOSED RULE MAKING

Adopted: February 12,2003 Released: February **25,2003**

Comment Date: 60 days after Federal Register publication
Reply Commenl Date: 90 days after Federal Register publication

By the Commission:

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I. INTRODUCTION AND EXECUTIVE SUMMARY

1. In the ***Report and Order and Further Notice of Proposed Rule Making*** (**"*R&O*"** and ***"FNPRM'*** respectively) in this proceeding.[1] the Commission, ***inferalia,*** sought comment on certain

[1] Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended; Promotion of Spectrum Efficient Technologies on Certain Part 90 Frequencies; Establishment **of** Public Service Radio Pool in the Private Mobile Frequencies Below 800 MHz; Petition for Rule Making **of** the American Mobile Telecommunications Association, ***Report and Order and Further Norice of Proposed Rule Making,*** WT Docket No. 99-87, RM-9332, RM-9405, RM-9705, 15 FCC Rcd 22709 (1999)(***"R&O and FNPRM").***

proposals to promote new spectrum-efficient technology. This *Second Repon and Order* ("2nd *R&O*") addresses the comments and reply comments received with respect to promoting new spectrum-efficient technologies as proposed in the ***FNPRM.*** The *Second Further Notice of Proposed Rule Mating* ("2nd ***NPRM***") seeks comment on additional issues related to promoting spectrum efficiency in the private land mobile radio services (PLMRS).

2. The major decisions in this 2nd ***R&O*** are as follows:

- We prohibit any applications for new operations using 25 kHz channels, beginning six months after publication of the 2""***R&O*** in the Federal Register.

- We prohibit any modification applications that expand the authorized contour of an existing station if the bandwidth for transmissions specified in the modification application is greater than 12.5 kHz, beginning six months after publication of the 2nd ***R&O*** in the Federal Register.

- We prohibit the certification of any equipment capable of operating at one voice path per 25 kHz of spectrum, *i.e.* equipment that includes a 25 kHz mode, beginning January 1, 2005.

- We prohibit the manufacture and importation of any 150-174 MHz and 421-512 MHz band equipment that can operate on a 25 kHz bandwidth beginning January 1, 2008.

- We impose deadlines for migration to 12.5 kHz technology for PLMRS systems operating in the 150-174 MHz and 421-512 MHz bands. The deadlines are January 1,2013 for non-public safety systems and January 1,2018 for public safety systems.

3. In addition, the 2nd ***FNPRM*** seeks comment on whether the equipment certification provision in the current rules is sufficient to promote migration to one voice path per 6.25 kHz bandwidth, or equivalent technology or whether migration to 6.25 kHz bandwidth or equivalent technology should be mandatory.

II. BACKGROUND

4. In the *R&O*, the Commission adopted rules and policies to implement Sections 309(j) and 337 of the Communications Act of 1934, as amended by the Balanced Budget Act of 1997.[2] The Commission decided to retain the current licensing scheme for the PLMRS frequencies below 470 MHz.[3] It concluded that the continued use of a site-based licensing approach for these channels on a shared basis, rather than on an exclusive basis, was in the public interest.[4]

5. Within this context, the Commission sought further comment in the ***FNPRM*** on a petition for rulemaking filed by the American Mobile Telecommunications Association, Inc. (AMTA) proposing that certain Pan 90 licensees be required to employ new spectrum-efficient technologies.'

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[2] The Commission addressed petitions for reconsideration of the ***R&O*** in a ***Memorandum Opinion and Order*** in this proceeding. **See** Implementation of Sections 309(j) and 337 **of** the Communications Act of 1934 as Amended, ***Memorandum Opinion and Order.*** WT Docket No. 99-87. 17 FCC Rcd **7553 (2002).**

[3] ***R&O and FNPRM,*** 15 FCC Rcd at 22755 ¶ 96, 22759 ¶ 107

[4] ***Id.*** at 22754 ¶ 95

[5] ***R&O and FNPRM,*** 15 FCC Rcd at 22772-73 ¶¶ 141-42. ***See generally*** AMTA Petition for Rulemaking (RM-9332) at 3 (filed June 19, 1998)(describes AMTA's proposal) ("AMTA Petition"). AMTA's petition **was** placed on public notice **on** July 31, 1998, **see** Public Notice, Report No. 2288 (rel. July 31. 1998). and included in the ***NPRM*** in this proceeding. **see** Implementation **of** Sections 309(j) and 337 of the Communications Act of 1934 as Amended; Promotion of Spectrum Efficient Technologies on Certain Part 90 Frequencies; Establishment of Public Service

(continued...)

The AMTA Petition urged that non-public safety licensees in the bands between 222 MHz and 896 MHz be required to either deploy technology that achieves the equivalent of two times the capacity of most current operations, *i.e.*, one voice path per 12.5 kilohertz of spectrum using a 25 kilohertz frequency,[6] or accept secondary status.[7] AMTA contended that such requirements are needed because, under the current rules, it is financially imprudent for a licensee to invest in new, more efficient technology, since doing so results in additional costs without additional benefits for its system.[8]

6. In addition, in the ***FNPRM***, the Commission sought comment on the effectiveness of the current Part 90 rules, which were adopted in the course of the Commission's ***Refarming*** proceeding, PR Docket No. 92-235;[9] on the current pace of migration to narrowband technology;" and on whether sufficient time has elapsed to allow it to evaluate the effectiveness of the current rules.[11] The current rules provide that, in order to encourage migration to narrower bandwidths or their technological equivalents, we will certify only increasingly efficient equipment." The Commission allowed 25 kHz capability to be included in new narrowband 12.5 kHz and/or 6.25 kHz equipment, *i.e.* multi-mode operation, facilitating "backward compatibility." The Commission permitted this multi-mode equipment on the premise that supporting existing 25 kHz systems would ultimately lead

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Radio Pool in the Private Mobile Frequencies Below 800 MHz; Petition for Rule Making of the American Mobile Telecommunications Association, ***Notice of Proposed Rule Making.*** WT Docket No. 99-87. RM-9332. RM-9405, KM-9705. 14 FCC Rcd 5206. 5242 ¶ 71 (1999). The Commission also sought comments addressing the use of 900 MHz PLMR channels in commercial operations. This matter is now being addressed in another proceeding. See Improving Public Safety Communications in the 800 MHz Band; Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels, ***Notice of Proposed Rule Making***, WT Docket No. 02-55, 17 FCC Rcd 4873 (2002)(*800 MHz NPRM*).

[6] AMTA Petition at 6. AMTA excluded from this proposal all channel blocks awarded by competitive bidding, as well as Part 90 spectrum at 220 and 900 MHz, because bandwidth requirements are already strict in those bands. *Id.* Although AMTA's primary concern here is to facilitate migration to one voice path per 12.5 kHz of spectrum, we note that the Commission, in the ***Refarming R&O and FNPRM,*** stated that narrowband or NB refers to channel spacings of 7.5 kHz in the VHF PLMR band and 6.25 kHz in the UHF PLMR bands, or channel bandwidths of 6.25 kHz or less in all PLMR bands unless otherwise specified. See Replacement of Pan 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them, ***Report and Order and Further Notice of Proposed Rule Making,*** PR Docket No. 92-235, 10 FCC Rcd 10076, 10080 n.6 (1995) ***("Refarming R&O and FNPRM').*** In that connection. the Commission added NB technology or NB equipment will include all advanced technologies designed to operate with channel bandwidths of 6.25 kHz or less or equipment with 6.25 kHz equivalent efficiency such as TDMA (2 channels in 12.5 kHz or 4 channels in 25 kHz). *Id.*

[7] AMTA Petition at 7. Secondary operations may not cause interference to operations authorized on a primary basis and are not protected from interference from those primary operations. 47 C.F.R. § 90.7.

[8] AMTA Petition at 3. AMTA argued that when commercial licensees operate on shared spectrum, any increased capacity would merely become available to co-channel licensees who have not made a comparable investment. ***Id.***

[9] ***See Refarming R&O and FNPRM*** 10 FCC Rcd 10076; ***see also Memorandum*** Opinion ***and Order,*** 11 FCC Rcd 17676 (1996) ***("Refarming MO&O").***

[10] In the ***Refarming NOI***, the Commission noted that narrowband is a relative term and prior to 1968, there was a one voice path per 120 kHz standard. See Spectrum Efficiency in the Private Land Mobile Radio Bands in Use Prior to 1968, *Notice of Inquiry*, PR Docket No. 91-170, 6 FCC Rcd 4126, 4131-32 ¶ 40 (1991) ***(Refarming NOI)***. For the purposes of this *2nd R&O and 2nd FNPRM*, narrowband technology will refer to utilization of one voice path per 12.5 kHz of spectrum.

[11] ***R&O and FNPRM,*** 15 FCC Rcd at 22772-73 ¶ 141.

[12] *Refarming R&O and FNPRM*, 10 FCC Rcd at 10099 ¶ 38; ***see also*** 47 C.F.R. § 90.203(j)(2)-(3).

to conversion to 12.5 kHz and/or 6.25 kHz operations.[13] It was envisioned that such an approach would provide for ease of transition and introduce narrower-band equipment to a nascent marketplace. In particular, since February 1, 1997, certification of equipment for 25 kHz channels has been permitted only if the equipment is capable of operating on 12.5 kHz and/or narrower channels, though it may also operate on wider channels.[14] Further, under the current rules, after January I, 2005, only new equipment that is capable of operating on *6.25* kHz channel bandwidths will be certified." That is, the Commission's rules provide that new equipment that operates on 25 and/or 12.5 kHz channels will be authorized after January 1, 2005 only if it is also capable of operating on 6.25 kHz or narrower channels."

7. Although the Commission encouraged migration to narrowband technology, the current rules do not require users to replace existing systems." Nor do they prohibit the sale of previously certified equipment that uses less spectrally efficient technology. Rather, by limiting the availability *of* new certifications to such equipment, the Commission expected that the certification process itself could provide the catalyst for transition from one technology to another." The Commission specifically declined in the *Refarming* proceeding to mandate manufacturing and licensing requirements, deciding instead to allow licensees to choose equipment and a transition schedule that best fulfills their needs while balancing technical capabilities and financial considerations.[19]

8. AMTA and others have argued in this proceeding that we should adopt a timetable for mandatory migration to narrowband technology, because the certification rules from the *Refarming* proceeding are not resulting in migration as rapidly as the Commission anticipated." Other commenters believed that the *Refarming* rules should be retained at least for the time being, because not enough time has elapsed to assess the outcome of that approach.[21]

9. In the *FNPRM,* the Commission tentatively concluded that the current pace of migration to more spectrally efficient technology has not been sufficiently rapid.** It sought comment on this tentative conclusion, as well as on whether enough time has elapsed to allow us to evaluate the effectiveness of our current rules.[23] The Commission tentatively concluded that it should encourage migration to narrowband technology by prohibiting the manufacture or importation of equipment that does not meet certain efficiency standards by certain dates." The Commission also sought comment on whether it should require employment of new spectrum-efficient technologies by certain dates. and, if so, what timetable would be appropriate for implementing any new requirement.[25]

" *See Refarming R&O and FNPRM,* 10 FCC Rcd at 10100 ¶ 40.

[14] *Id.* at 10 FCC Rcd at 10099-100 ¶ 38-40; *see also Refarming MO&O*, 1 I FCC Rcd 17676.

[15] See 47 C.F.R. § 203(j)(4)-(5); *see also Refarming R&O and FNPRM,* 10 FCC Rcd at 10099 ¶ 38.

[16] *See* 47 C.F.R. § 203(j)(2)(ii), (4)(iii); *see also Refarming R&O and FNPRM.* 10 FCC Rcd at 10100 ¶ 40.

[17] *Refarming R&O and FNPRM,* 10 FCC Rcd at 10080-82 ¶ 7.

[18] *Id.* at 10097-98 ¶¶ 34-36.

[19] *Id.* at 10099 ¶ 37.

[20] *See R&O and FNPRM, 15 FCC* Rcd at 22772 ¶ 141.

[21] *See id.*

[22] *Id.*

[23] *Id.*

[24] *Id.* at 22173 ¶ 142.

[25] */d.*

IJI. SECOND REPORT AND ORDER

10. Our tentative conclusion that the ***Refarming*** proceeding has not resulted in a rapid migration to narrower band usage or the technological equivalent on PLMRS frequencies below 800 MHz was based **on** the observations of many of the cornmenters at the initial stages of this rulemaking proceeding. For example, AMTA and PCIA opined that the transition is not occurring as rapidly as the Commission intended.[26] UTC stated that the ***Reforming*** process has caused significant delays due to regulatory uncertainty.[27] Similarly, ComSpace believed that the current regulatory scheme has resulted in unbalanced uncertainty, a delayed transition and ever-increasing congestion.[28]

I I. The record developed in response to our tentative conclusion supports the proposition that the Commission's ***Refurming*** rules have not resulted in the desired efficiency of use of spectrum in the 150-174 MHz and 421-512 MHz bands. AMTA contends that inefficient use of spectrum continues because the current ***Refarming*** rules do not provide a sufficient incentive for incumbents to use more efficient technology.[29] APCO asserts that the vast majority of operations on channels below 512 MHz remain at wider bandwidths.[30] Similarly, **ITA** believes that the stimulus anticipated in the ***Refarming*** proceeding has proven inadequate to propel use **of** more efficient technology.[31] LMCC notes the continued receipt of applications for frequency coordination **of** new 25 kHz wideband systems.[32] UTC also avers that the current ***Refarming*** rules do not promote migration to more efficient technologies.[33]

12. We agree with the majority of commenters that our current approach to encourage spectral efficiency in the PLMRS bands, based **on** the equipment certification process, is not by itself sufficient to bring about a timely transition to narrowband technology; thus, we conclude that stronger action is required. As discussed herein, we amend our rules to provide a IO-year schedule for the migration of PLMR systems to narrowband technology. Specifically, our amended rules will: I) beginning six months after publication of this 2^{nd} ***R&O*** in the Federal Register, prohibit any applications for new operations using 25 kHz channels, for any system operating in the 150-174 MHz or 421-512 MHz bands: 2) beginning six months after publication of this 2^{nd} *R&O* in the Federal Register, allow incumbent 25 kHz Pan 90 licensees in the 150-174 MHz and 421-512 MHz bands to make modifications to their systems provided their respective authorized interference contours are not expanded as a result thereof; **3)** beginning January **1,** 2005, prohibit the certification of ***any*** equipment capable of operating at one voice path per 25 kHz of spectrum, *i.e.*, multi-mode equipment that includes a 25 kHz mode; **4)** beginning January 1, 2008, prohibit the manufacture and importation of any 25 kHz equipment (including multi-mode equipment that can operate **on** a 25 kHz bandwidth); **5)** beginning January I, **2013,** require non-public safety licensees using channels in these bands to deploy technology that achieves the equivalent of one voice path per 12.5 kHz of spectrum; **6)** beginning January I, 2018, require public safety licensees[34] using channels **in** these bands to deploy

[26] **See** AMTA Petition at 5; PCIA Comments (RM-9332) at 2-3

[27] UTC Comments (RM-9332) at 12.

[28] ComSpace Reply Comments (RM-9332) at **4.**

[29] AMTA Comments at 4.

[30] APCO Comments at 3.

[31] ITA Comments at **7.**

[32] LMCC Comments at 3.

[33] UTC Reply Comments at 3.

[34] **See 47** C.F.R. § 90.20.

technology that achieves the equivalent of one voice path per 12.5 kHz of spectrum.[35]

13. First, we note that there is a consensus among the commenters, including AMTA, that any change in spectrum efficiency requirements should be limited to frequency bands below 800 MHz, *i.e.*, "refarmed" bands.[36] We agree. The "refarmed' bands at 150-174 MHz and 421-512 MHz are licensed on a shared basis. By contrast, the 800 MHz and 900 MHz bands are licensed on an exclusive basis." A licensee operating in a shared use environment does not necessarily directly accme the benefits of its own investment in narrowband technology. Even if that licensee chooses more efficient equipment, other users in the band may not. Moreover, any spectrum efficiency gains may be realized by others sharing the spectrum, or by new applicants who gain access to the shared spectrum, rather than by the licensee choosing to use more efficient technology. Such dependency and resulting investment disincentives for any licensee to become more efficient are not manifest in the bands above 800 MHz where channels are exclusive, rather than shared.[38] The current certification rules apply to use of channels in the 150-174 MHz and 421-512 MHz bands and do not extend to channels above 512 MHz.[39] As the Commission indicated in the ***Refarming NOI,*** the rules governing spectrum above 800 MHz already contain incentives designed to foster the research and development of advanced, spectrum-efficient techniques.[40] For example, PCIA contends that trunked 800 MHz operations already efficiently use spectrum.[41] In that connection, we note that the ***Refarming*** *NO/* cites trunking as an efficiency that is encouraged in the 800 MHz band.[42] Additionally, there are regulatory and operational distinctions between operations above 800 MHz band and those below 800 MHz band.[43] For example, licensees in 800 MHz and 900 MHz bands are

[35] Except for the date that operation on a 12.5 kHz bandwidth becomes mandatory, the rule changes that we adopt today apply equally to both public safety and non-public safely licensees. We note that, while AMTA's original proposal was limited to nun-public safety users, the actions suggested by the Commission's tentative conclusions applied equally to public safety licensees. Similarly, while AMTA's original proposal concerned the bands between 222 MHz and 800 MHz, the Commission proposed to amend rules that also govern the 150-174 MHz band. Thus, the decisions in this 2"" *R&O* do not expand the scope of this proceeding beyond that contemplated by the FNPRM.

[36] AMTA Comments at n.5; American Petroleum Institute (API) Comments at 3-4; Cinergy Comments at 7; Personal Communications Industry Association. Inc. (PCIA) Comments at 3; SCANA Reply Comments at 3-4; Xcel Reply Comments at 3-4; UTC Reply Comments at 5-6; AMTA Reply Comments at 1-3, 6 (agreeing with commenters that its proposal should bc limited to bands below 800 MHz band); see *generally Refarming* R&O *and* ***FNPKM,*** 10 FCC Rcd at 10092 ¶ 24 (identifying frequency bands 150-174, 421-430, 450-470 and 470-512 MHz as the frequency bands subject to refarming).

[37] See Amendment of Part 90 of the Commission's Rules to Release Spectrum in the 806-821/856-866 MHz hands and to Adopt Rules and Regulations which Govern Their Use, PR Docket 79-191, RM-3380, PR Docket 79-334, **RM-3691,** PR Docket 79-107, PR Docket 81-703, ***Second Report and Order,*** 90 FCC 2d 1281 (1982) and Amendment of Parts 2, 15, and 90 of the Commission's Rules and Regulations to Allocate Frequencies in the 900 MHz Reserve Band for Private Land Mobile Use, GEN Docket 84-1231, RM 4812, CEN Docket 84-1233, RM 4829, GEN Docket 84-1234, RM-4247, Reporr *and* ***Order,*** 2 FCC Rcd 1825 (1986).

[38] Petition at 3; *see also Refarming NOI*, 6 FCC Rcd 4126, 4133 ¶ 51.

[39] *See* 47 **C.F.R.** § 90.203(j); see Motorola Commenls at 5 (noting the inapplicability of *Refarming* to 800 MHz band); SCANA Reply Comments at 5 (stating that any rule changes should not apply to 800 MHz band because the current rules do not apply to 800 MHz band).

[40] See *Refarming NOI*, 6 FCC Rcd at 4127 ¶¶ 4-5

[41] PCIA Comments at 3.

[42] ***Refarming NOI,*** 6 FCC Rcd at 4129-30, ¶¶ 24-25, 29.

[43] API Comments at 4.

permitted to utilize non-standard bandwidths. subject to interference standards.[44] We agree with these commenters and the reasons offered above for excluding operations above 512 MHz, and will limit any new requirements to operations in the ***Refarming*** bands -- 150-174 MHz and 421-512 MHz.

14. The clear majority of commenters support mandatory conversion to 12.5 kHz equivalent equipment. Most of these commenters agree that such a conversion should be by a date certain, although they do not agree on the timeframe for such mandatory conversion.[45] **AMTA,** Digital Wireless Corporation (DWC) and the American Petroleum Institute **(API)** propose mandatory migration in a tiered fashion based on market size.[46] Similarly, APCO argues that public safety licensees in rural areas should not be required to migrate to narrowband technology at the same time as those in urban areas, in light of state and local government budgetary constraints.[47] **AMTA** and API argue for a phased approach on the basis that greater efficiency is required in those areas where demand for spectrum is at a high level; moreover. they suggest that congestion is generally less severe in smaller markets.[48] In addition, DWC states that a phase-in schedule would ease the burden on equipment manufacturers and better balance the supply and demand ratio.[49]

15. By contrast, the majority of the remaining commenters argue that a single transition date should be used for the entire country. In this connection, PCIA and **ITA** argue that a nationwide plan ensures a uniform and smooth transition to narrowband technology and avoids the difficulty of defining a market's location and defining benchmarks for frequency coordination for operators inside and outside a market." Moreover, **ITA** states that a tiered transition to narrowband technology, with differing technologies deployed in rural and urban areas, would not address the extent to which radio systems are integrated across all geographic areas." It anticipates that certain licensees may operate communications systems in various markets that cross more than one geographic area, and a migration period that attempts to draw lines **of** distinction among markets would either delay or impede the most efficient use of spectrum.[52] **As** for the proposed time frames in which to mandate nationwide conversion to narrowband technology. **some** parties suggest a relatively brief transition

[44] **See** Amendment of Part 90 of the Commission's Rules to Release Spectrum in the 806-821/856-866 MHz bands and to Adopt Rules and Regulations which Govern Their Use, PR Docket 79-191, RM-3380, PR Docket 79-334, RM-3691, PR Docket 79-107, PR Docket 81-703, ***Second Report and Order,*** YO FCC 2d 1281 (1982) and Amendment of Parts 2, 15, and YO **of** the Commission's Rules and Regulations to Allocate Frequencies in the 900 MHz Reserve Band for Private Land Mobile Use, GEN Docket 84-1231, RM 4812, GEN Docket 84-1233. RM 4829, GEN Docket 84-1234, RM-4247, ***Reporr and Order,*** 2 FCC Rcd 1825 (1986).

[45] **See** *e.g.* **AMTA** Comments **at** 6; API Comments at 5-6; Industrial Telecommunications Inc. **(ITA)** Supplemental Comments at 2-3; Digital Wireless Corporation (DWC) Reply Comments at 2, 4-6; UTC Reply Comments at 3.

[46] ***See*** AMTA Comments at ***6*** (suggests mandatory migration to 12.5 kHz equipment in the top fifty markets by December 31, 2003; markets 51-100 by December 31, 2008; and all other markets by December 31, 2020); AMTA Reply Comments at n.10 (states that it **is** considering changing its proposal to require mandatory migration for the top 100 markets by December 31, 2003); APl Comments at 5-6 (proposes migration to 12.5 kHz equipment for markets 1-50 by five years from effective date of this ***2nd R&O*** and for markets 51-100 by eight years from effective date of this ***2nd R&O***); DWC Reply Comments at 2, 4-6 (suggests migration to 12.5 kHz equipment for markets 1-50 by December 31, 2003, for markets 51-100 by December 31, 2005, and for all other markets by December 31, 2008).

[47] APCO Comments at 3-4.

[48] AMTA Comments at 7; API Comments at 6.

[49] DWC Reply Comments at 4.

[50] PCIA Comments at 3; ITA Supplemental Comments at 2-3.

[51] ITA Supplemental Comments at 2.

[52] Id.

period in the range of three years (proposed by ITA)[53] to five years (proposed by **PCIA** and MRFAC).[54] Other commenters, however, while not opposing mandatory migration to narrowband technology, argue that the lifespan of equipment, which they suggest is ten to fifteen years,[55] be considered prior to adoption of a date certain for mandatory migration."

16. Finally, two commenters argue that the tenets of the ***Refarming*** proceeding should be allowed to mature prior to implementing any additional spectrum efficiency requirements.[57] They suggest that the imposition of mandatory conversion dates would fail to consider the amortization and lifespan of current equipment and the costs associated with converting or abandoning current equipment." They also are concerned that such an approach would impose a significant and unnecessary burden on licensees.

17. Based upon our review and analysis of the record in this proceeding, we conclude that the public interest would be best served if we establish a date certain by which PLMRS licensees in the ***Refarming*** hands must migrate to narrowband technology. We agree with the majority of commenters, who advocate a nationwide implementation methodology to affect migration to narrowband technology, rather than the establishment of different dates for different areas.[59] We also agree with APCO, however, that consideration should be given to the budgetary constraints of state and local governments and the associated budgetary planning cycles. Consequently, we adopt different nationwide mandatory migration dates for non-public safety systems and public safety systems.

18. We believe that the date certain should be January 1, 2013 for non-public safety licensees. As discussed earlier, some parties advocate a three-to-five year span for implementation of narrowband migration; while others argue that a ten-to-twenty year span is necessary." The parties that support a shorter time frame suggest that PLMR licensees have been on notice since the ***Refarming*** proceeding that the Commission sought to improve migration to narrowband technology. On the other hand, those commenters that suggest the longer time frame for migrating to narrowband technology note the importance of amortization of equipment costs and the life span of equipment. We believe that mandating migration to 12.5 kHz technology by January 1, 2013 for non-public safety entities strikes a balance between the budgetary exigencies surrounding equipment costs and our goal of promoting spectral efficiency in a fairly expeditious manner. While we cannot ensure that the lifespan of all 25 kHz equipment is completely exhausted prior to required migration to 12.5 kHz technology, we can implement rules that afford consideration of equipment lifespan and amortization. Just as users in this proceeding estimate ten-, fifteen- and twenty-year time frames for equipment

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[53] *Id.* at 2-3

[54] PCIA Comments at 3-4; MFRAC Comments at 2-3. Other commenters support a uniform nationwide requirement, but do not propose a specific migration date. See Land Mobile Communications Council (LMCC) Comments at 3-4; Motorola Comments at 5-6; UTC Reply Commenls at 3

[55] We note that in the ***Refarming*** proceeding, ten years was deemed a reasonable transition cycle for replacing equipment. ***See Refarming R&O and FNPRM,*** 10 FCC Rcd 10098 ¶ 35.

[56] APCO Comments at 3-4; Cinergy Comments at 5

[57] Association of American Railroads (AAR) Commenls at 3; DW Communications, Inc. Comments at 2

[58] AAR Comments at 3; DW Communications, Inc. Comments at 2.

[59] ***See supra*** para. 15.

[60] ***See supra*** paras. 14-15.

lifespan,[61] users in the ***Refarming R&O and FNPRM*** stated that many systems last between fifteen to twenty years. However, in the ***Refarming R&O and FNPRM,*** there was general agreement that ten years was a reasonable transition cycle.[62] Therefore, in this instance, we afford those non-public safety licensees using one voice path per 25 kHz of spectrum permission to continue operating until January 1, 2013, a ten-year period.

19. With respect to public safety licensees, we believe that public safety licensees play a role, along with other PLMR licensees, in ensuring that spectral efficiencies are realized in the 150-174 MHz and 421-512 MHz bands. As such, the Commission did not exclude public safety licensees in the ***Refarming*** rules: nor did the Commission exclude public safety licensees from the questions posed regarding the efficiencies in the 150-174 MHz and 421-512 MHz bands in this proceeding. APCO requests consideration of equipment cost amortization, and suggests that ten years is a reasonable equipment replacement cycle and a reasonable life span for equipment.[63] However, APCO asks that public safety licensees in rural markets be provided an additional five years to migrate to 12.5 kHz technology.[64] To avoid the inefficiencies of producing interference and impeding interoperability, we also reject APCO's request for a phased approach for public safety licensee migration to narrowband technology.[65] Although we decline adoption of a phase-in implementation approach by markets for public safety licensees, we nonetheless are mindful of the unique budgetary paradigm under which public safety licensees must plan, design, finance and implement their communications systems. The Commission has previously acknowledged the budgetary constraints that public safety licensees endure and implemented special provisions to account therefor. For example, in the ***Microwave Relocation*** proceeding, the Commission reasoned that the longer negotiation timetable provided for public safety licensees was intended to reflect the fact that public safety agencies typically operate under greater budgetary constraints and longer planning cycles than do non-public safety entities.[66] Likewise, the Commission incorporated a channelization approach in 700 MHz band to ensure that the 70 MHz public safety band spectrum is used efficiently in light of budgetary concerns that usually drive the public safety decision making regarding radio communications systems![67] Similarly, we believe that special consideration should be given here regarding the financial limitations of public safety licensees. Accordingly, we will provide for a longer migration period for public safety licensees. All public safety licensees shall be required to migrate to 12.5 kHz technology by January 1, 2018, providing an additional five years from the time by which non-public safety licensees will be required to migrate.

20. We reject APCO's suggestion that any public safety licensee failing to meet its migration

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[61] APCO Comments at 3-4 (suggesting that a reasonable equipment lifespan for top 50 markets would be 10 years and that the for remaining markets, a reasonable equipment lifespan would be 15 years); Cinergy Comments at 5 (stating that 15 years or more represents the life span of equipment).

[62] ***Reforming R&O and FNPRM,*** 10 FCC Rcd at 10098¶ 35.

[63] APCO Comments at 3.

[64] *Id.* at **4**

[65] *See supra* **para. 14**

[66] *See* Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation, ***Second Reporr and Order,*** WT Docket 95-157, 12 FCC Rcd 2705.27 I2¶ 14 (1997).

[67] See Development of Operational, Technical and Spectrum Requirements For Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010: Establishment of Rules and Requirements for Priority Access Service, ***Third Memorandum Opinion and Order and Third Reporr and Order,*** WT Docket 96-86, 15 FCC Rcd 19844. 19853-54 ¶ 22 (2000) (observing that each jurisdiction typically provides public safety communications to better protect the safety of life and property – with spectrum utilization based more on budgetary limitations than on considerations of the most efficient and effective technologies).

deadline be permitted to continue to operate on a secondary basis.[68] **APCO** fails to offer guidance as to how to resolve issues resulting from secondary basis operation, such as resolution of interference complaints and whether it would be in the public interest to compel a secondary public safety licensee to discontinue operations immediately because it was causing interference to a primary licensee. Moreover, we believe that the relief afforded by the later mandatory migration date for public safety licensees addresses the concerns which appear to be the basis for *APCO's* request.

21. We also conclude that we should take other steps to increase spectrum efficiency **in** the 150-174 MHz and 421-512 MHz bands prior to the mandatory migration dates. While we believe that the incremental changes set forth below do not by themselves guarantee use **of** narrowband technology, we do believe that they will serve as catalysts toward employment of 12.5 kHz technology and encourage licensees to begin their conversion to narrowband technology prior to the mandatory migration dates established herein.

22. **As** noted above, presently we approve 25 kHz equipment so **long** as it also is capable of 12.5 kHz operation.[69] Under our current rules, we would continue to approve 25 kHz equipment after January I, 2005, provided that it is capable of 6.25 kHz operation.[70] Based on the record **in** this proceeding, however, we now conclude that the continued approval of new equipment that operates on a 25 kHz bandwidth impedes our goal of encouraging more efficient spectrum use, by encouraging the continued use of 25 kHz equipment with which the new equipment is backward-compatible. Such an approach is appropriate in a regulatory framework where equipment certification represents the limit of inducement to migrate to narrowband technology. However, in light of our decision to establish a firm migration date, we are concerned that allowing backward compatibility might frustrate the underlying purpose -- to ensure efficient use of spectrum by promoting expeditious migration to narrowband technology. Therefore, we will amend our rules to prohibit the certification of ***any*** equipment capable of operating at one voice path per 25 kHz of spectrum, *i.e.*, multi-mode equipment that includes a 25 kHz mode, beginning January I, 2005. We elect to begin this prohibition in concert with the date on which equipment certification will require operation on channels of 6.25 kHz or less. We also believe this interim step will prepare licensees for their upcoming migration to 12.5 kHz technology.

23. **As** another means toward promoting and facilitating migration to narrowband technology. commenters suggest a freeze on new applications that propose to use 25 kHz bandwidth channels.'' These commenters argue that the introduction of 25 kHz-only wideband systems must end in order to facilitate migration **to** 12.5 kHz technology.[72] We agree that continuing to accept new wideband applications would result in a continued and broader proliferation of 25 kHz operations. We also agree that such consequence would hinder migration to 12.5 kHz technology. To that end, we will amend our rules to prohibit any applications for new operations using 25 kHz channels, for systems operating in the 150-174 MHz or 421-512 MHz bands, beginning six months after publication of this *2nd* ***R&O*** in the Federal Register.[73] After that date, new systems will be authorized

[68] APCO Comments **ai** 4.

[69] 47 C.F.R. § 90.203(j)(2).

[70] 47 C.F.R. § 90.203(j)(4).

[71] **AMTA** Comments 5-6; DWC Reply Comments **ai 2,** LMCC Reply Comments at **3-4; PClA** Reply Comments **ai** 2. ***Rut see*** **API** Reply Comments ai **5.**

[72] **AMTA** Commcnls 5-6; DWC Reply Cornmenis at **2,** LMCC Reply Comments **ai** 3-4; PClA Reply Comments ai 2.

[73] **This** liming will permit the filing and processing **of** applications already in the process of being prepared and coordinated.

only for a bandwidth of 12.5 kHz or less. We note that the record reflects that **12.5** kHz equipment already is widely available.[74] Thus, we do not believe that this approach would be unduly burdensome to current and prospective licensees.

24. Another related issue is how the expansion of existing *25* kHz systems should be treated in the new PLMR environment we establish today. One commenter suggests that modification applications to add frequencies to a system should be permitted only if the equipment is 12.5 kHz compatible.[75] Another commenter argues that certain types of modifications, such **as** adding mobiles and small location changes, should be permitted even if *25* kHz equipment will be used.[76] When the Commission began the transition from a site-by-site licensing approach to a geographic area licensing approach for the 800 MHz Specialized Mobile Radio (SMR) service, the interests of incumbent SMR licensees were considered.[77] The Commission determined that the incumbent SMR licensees should he permitted to make modifications within their authorized interference contour.[78] These measures were implemented to promote geographic area licensing and promote the relocation of the upper 200 channel incumbents in the 800 MHz band, while accounting for the continuing needs of the site-by-site licensed incumbents. Similarly, it is our objective here to promote migration to narrowband technology in order to alleviate congestion, while also accounting for the needs of 25 kHz incumbents. Therefore, **we** will allow incumbent 25 kHz **Part** YO licensees in the 150-174 MHz and 421-512 MHz bands to make modifications to their systems provided their respective authorized interference contours are not expanded as a result thereof. Any modification application that expands the authorized contour will be granted only on the condition that the bandwidth not exceed 12.5 kHz. This change also will take effect six months after publication of this *2nd R&O* in the Federal Register.

25. Further, the Commission tentatively concluded in the ***FNPRM*** that it should ban the importation and manufacture of inefficient equipment.[79] One commenter suggests, ***inter alia,*** prohibiting manufacture or importation of equipment which does not have the capability of at least one voice path per 12.5 kHz or equivalent effective six months from publication of this item in the Federal Register.[80] Another commenter supports such a ban, hut would make it effective beginning January 1, 2004.[81] We agree that the manufacture and importation of 25 kHz equipment should be prohibited in advance of the mandatory migration date to add **yet** another incentive for expeditious migration to 12.5 kHz technology. However, in light of the other incremental actions we take in this proceeding, *i.e.* prohibiting modifications to existing stations limited to those modifications that expand the station's authorized contour, prohibiting new operations using *25* kHz channels and prohibiting certification of any equipment capable of operating at one voice path per *25* kHz or

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[74] *See* AMTA Comments at *5; ITA* Comments at 6; Motorola Comments at 5.

[75] Motorola Comments at 6

[76] PClA Reply Comments at 2.

[77] *See* Amendment of Part YO of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Band. Implementation of Sections 3(n) and 322 of the Communications Act - Regulatory Treatment of Mobile Services and Implementation of Section 309(j) of the Communications Act – Competitive Bidding, ***First Report and Order, Eighth Report and Order and Second Furrher Notice of Proposed Rulemaking,*** PR Docket No. 93-144, 11 FCC Rcd 1463(1995).

[78] *Id.* at 1514 ¶ 86; ***see also*** Amendment of Part 90 of **the** Commission's Rules to *Facilitate Future Development* Of SMR Systems in the 800 MHz Band, Implementation of Sections 3(n) and 322 of the Communications Act - Regulatory Treatment of Mobile Services and Implementation of Section 309(j) of the Communications **Act** – Competitive Bidding, ***Second Reporrand Order,*** PR Docket No. 93-144, 12 FCC Rcd 19079. 19105¶ 67 (1997).

[79] ***R&O and FNPRM***, 15 FCC Rcd at 22773 ¶ ***142.***

[80] ITA Comments at 7

[81] MFRAC Comments at 3.

spectrum, we do not believe that this prohibition needs to occur as early as certain commenters have suggested. Moreover, we believe that operators who purchase equipment and receive approval to use equipment capable of operating at one voice path per 25 kHz of spectrum as late as December 31, 2004[82] should be able to realize some benefit from their certified equipment. Therefore, we will amend our rules to prohibit the manufacture and importation of any 25 kHz equipment (including multi-mode equipment that can operate on a 25 kHz bandwidth) beginning January 1, 2008.

26. Finally, we note that use of more efficient technology creates additional channels that become available for licensing (*i.e.*, the 12.5 kHz channel between the center frequencies of each current 25 kHz channel). In the ***Refarming R&O and FNPRM,*** the Commission noted the improved spectrum efficiency that would result from migration to narrowband technology.[83] Consistent with the assumptions underlying the ***Refarming*** proceeding, the current regulatory regime results in the licensee retaining authorization on the channels indicated on its license and the vacated channels reverting to their respective pools for assignment.[84] While the Commission sought comment on the treatment of new channels created as a result of users converting from 25 kHz to narrower band technology,[85] it never took action to implement any of the proposed alternatives. We decline to alter rhe current regulatory regime.

IV. SECOND FURTHER NOTICE OF PROPOSED RULE MAKING

27. In the ***2nd R&O*** in this proceeding, we amended our rules to impose a deadline of January 1, 2013 for mandatory migration to 12.5 kHz technology for non-public safety licensees and a deadline of January 1, 2018 for public safety licensees, and **took** other actions to encourage users to migrate from 25 kHz bandwidth to 12.5 kHz bandwidth technology before those dates. We note that the Commission did not seek comment in the ***FNPRM*** regarding migration to 6.25 kHz operation. Most commenters addressing the issue oppose a mandatory conversion date for use of 6.25 kHz compatible equipment.[86] Only one commenter proposed a date certain for conversion to 6.25 kHz equipment.[87] Another commenter suggests a mandatory conversion date to 6.25 kHz equipment, but warns that its proposed date may need to be revisited.[88] We note that operation at 12.5 kHz technology was initially viewed **as** a transitional standard to facilitate migration to 6.25 kHz technology.[89] In light **of** the actions taken in the ***2nd R&O*** regarding migration to 12.5 kHz technology. we tentatively conclude that similar actions are warranted to facilitate migration to 6.25 kHz technology. We seek comment on our tentative conclusion and ask that the commenters provide reasons for supporting or opposing our tentative conclusion. If mandatory migration to 6.25 kHz technology were adopted, we also seek comment on the date or dates by which licensees would be required to migrate to 6.25 kHz technology, and on any other compliance dates for other provisions facilitating migration to 6.25 kHz technology.

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[82] ***See supra*** para. 22

[83] ***Refarming R&O and FNPRM,*** 10 FCC Rcd at 10092¶ 24

[84] *See, e.g.*, **AMTA** Comments at 3 (acknowledging the broader public interest in maximizing the efficient use of limited spectrum resources); AAR Comments at 5 (recognizing the need for users of the radio spectrum to take steps to use this valuable national resource more efficiently); ITA Comments at 6 (stating that the entire industry would benefit from an increase **in** the amount of private land mobile channels **available** for **use).**

[85] ***Refarming R&O and FNPRM,*** 10 FCC Rcd at 10141¶ 148.

[86] **ITA** Comments at 8; LMCC Comments at **3;** Motorola Comments at 7

[87] APJ Comments at ***5***

[88] PCIA Comments at 4.

[89] ***See Refarming R&O and FNPRM,*** 10 FCC Rcd 10095¶ 28

V. PROCEDURAL MATTERS

A. Regulatory Flexibility Act Analyses

28. As required by the Regulatory Flexibility Act (RFA), ***see*** 5 U.S.C. § 604, the Commission has prepared a Final Regulatory Flexibility Analysis of the possible impact of the rule changes contained in this *2nd R&O* on small entities. The Final Regulatory Flexibility Act analysis is set forth in Appendix C. Additionally. we have prepared an Initial Regulatory Flexibility Analysis concerning the impact of the policies and rules addressed by the ***2nd FNPRM.*** The Initial Regulatory Flexibility Analysis is set forth in Appendix D. The Commission's Consumer Information Bureau, Reference Information Center, will send a copy of this ***2nd R&O and 2nd FNPRM.*** including the Final and Initial Regulatory Flexibility Act Analyses, to the Chief Counsel for Advocacy of the Small Business Administration.

B. Paperwork Reduction Act **of 1995** Analysis

29. This *2nd R&O* does not contain any new or modified information collection. Therefore, it is not subject to the requirements for a paperwork reduction analysis, and we have not performed one.

C. Filing Procedures

30. Pursuant to Sections 1.415 and 1.419 of the Commission's rules, 47 C.F.R. §§ 1.415, 1.419, interested parties may file comments on or before 60 days after publication in the Federal Register, and reply comments on or before 90 days after publication in the Federal Register. Comments may be filed using the Commission's Electronic Comment Filing System ("ECFS") or by filing paper copies. ***See Electronic Filing of Documents in Rulemaking Proceedings,*** 13 FCC Rcd 11322, 11326 (1998).

31. Comments filed through the ECFS can be sent as an electronic file via the Internet to <http://www.fcc.gov/e-file/ecfs.html>. Generally, only one copy of an electronic submission must be filed. If multiple docket or rulemaking numbers appear in the caption of this proceeding, however, commenters must transmit one electronic copy of the comments to each docket or rulemaking number referenced in the caption. In completing the transmittal screen, commenters should include their full name, Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To obtain filing instructions for e-mail comments, commenters should send an e-mail to ecfs@fcc.gov, and should include the following words in the body of the message, "get form <your e-mail address>." A sample form and directions will be sent in reply

32. Parties choosing to file by paper must file an original and four copies of each filing. If participants want each Commissioner to receive a personal copy of their comments, an original plus nine copies must be filed. All filings must be sent to the Commission's Secretary, Marlene **H.** Dortch, Office of the Secretary, Federal Communications Commission, The Portals, 445 12th Street. S.W.. Room TW-A325, Washington, D.C. 20554. In addition, courtesy copies should be delivered to Karen Franklin, Public Safety and Private Wireless Division, Wireless Telecommunications Bureau, Federal Communications Commission, 445 **12th** Street, S.W., Room **#4-C405,** Washington, **D.C.20554.**

33. All relevant and timely comments will be considered by the Commission before final action is taken in this proceeding. Comments and reply comments will be available for public inspection and duplication during regular business hours in the FCC Reference Information Center, Room CY-A257, 445 12th Street, S.W.. Washington, DC 20554. Copies also may be obtained from Qualex International., 445 12th Street, S.W., Room CY-B400, Washington, DC 20554, (202) 863-2893.

D. Further Information

34. For further information concerning this *2nd R&O and 2nd FNPRM,* contact Karen Franklin. Esq. Public Safety and Private Wireless Division, Wireless Telecommunications Bureau, Federal Communications Commission, Washington, D.C. 20554, at (202) 418-0680, TTY (202) 418-7233. Alternative formats (computer diskette, large print, audio cassette, and Braille) are available to persons with disabilities by contacting Jenifer Simpson at (202) 418-0008, TTY (202) 418-2555. This *2nd R&O and 2nd FNPRM* can be downloaded at http://www.fcc.gov/Wireless/Orders/2003.

VI. ORDERING CLAUSES

35. Accordingly, pursuant to Sections 1, 2, 4(i), 5(c), 7(a), 11(b), 301, 302, 303, 307, 308, 309(j) , 310, 312a, **316,** 319. 323, 324, 332, 333, 336, 337, and 351 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 155(c), 157(a), 161(b), 301, 302, 303, 307, 308, 309(j), 310, 312a, 316,319,323, 324,332. 333,336,337, and 351, the Balanced Budget Act of 1997, Pub. L. No. 105-33, Title 111, 111 Stat. 251 (1997), and Sections 1.421 and 1.425 of the Commission's Rules, 47 C.F.R. §§ 1.421 and 1.425, IT IS ORDERED that the ***Second Report and Order and Second Further Notice of Proposed Rule Making*** is hereby ADOPTED.

36. IT IS FURTHER ORDERED that Parts 1 and 90 of the Commission's Rules ARE AMENDED as set forth in Appendix B, and that these Rules shall be effective **[60 days after publication in the Federal Register].**

37. IT IS FURTHER ORDERED that NOTICE IS HEREBY GIVEN of the proposed regulatory changes contained in the ***Second Furrher Norice of Proposed Rule Making,*** and that comment is sought **on** these proposals.

38. IT IS FURTHER ORDERED that the Commission's Consumer Information Bureau, Reference Information Center, SHALL SEND a copy of this ***Second Report and Order and Order and Second Furrher Notice of Proposed Rule Making,*** including the Initial and Final Regulatory Flexibility Analyses, to the Chief Counsel for Advocacy of the U.S. Small Business Administration.

39. IT IS FURTHER ORDERED that the Motion to Accept Supplemental Comments submitted by Industrial Telecommunications Association, lnc. is GRANTED.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary